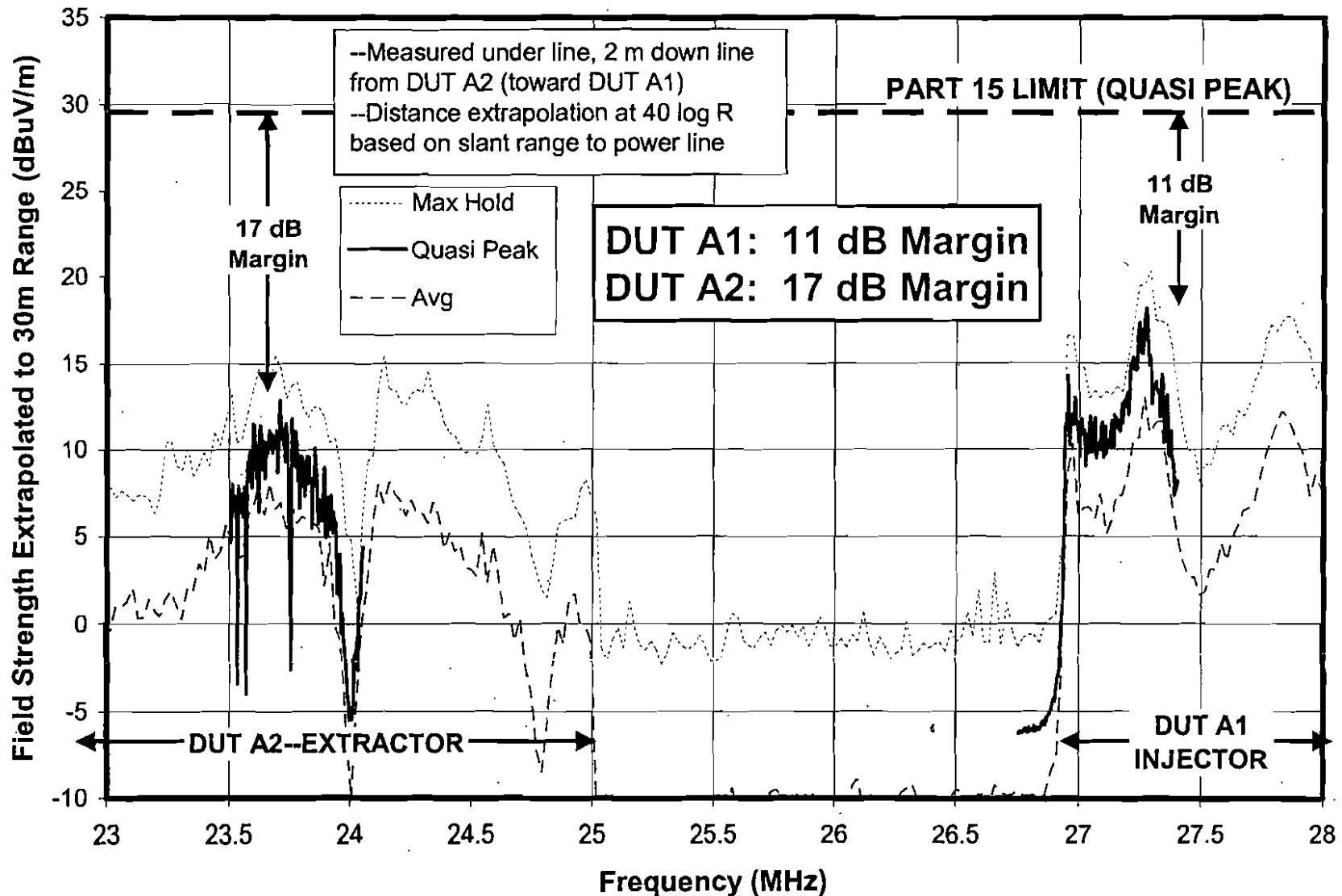




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Quasi Peak of DUTs A1 & A2: Under line near DUT A2



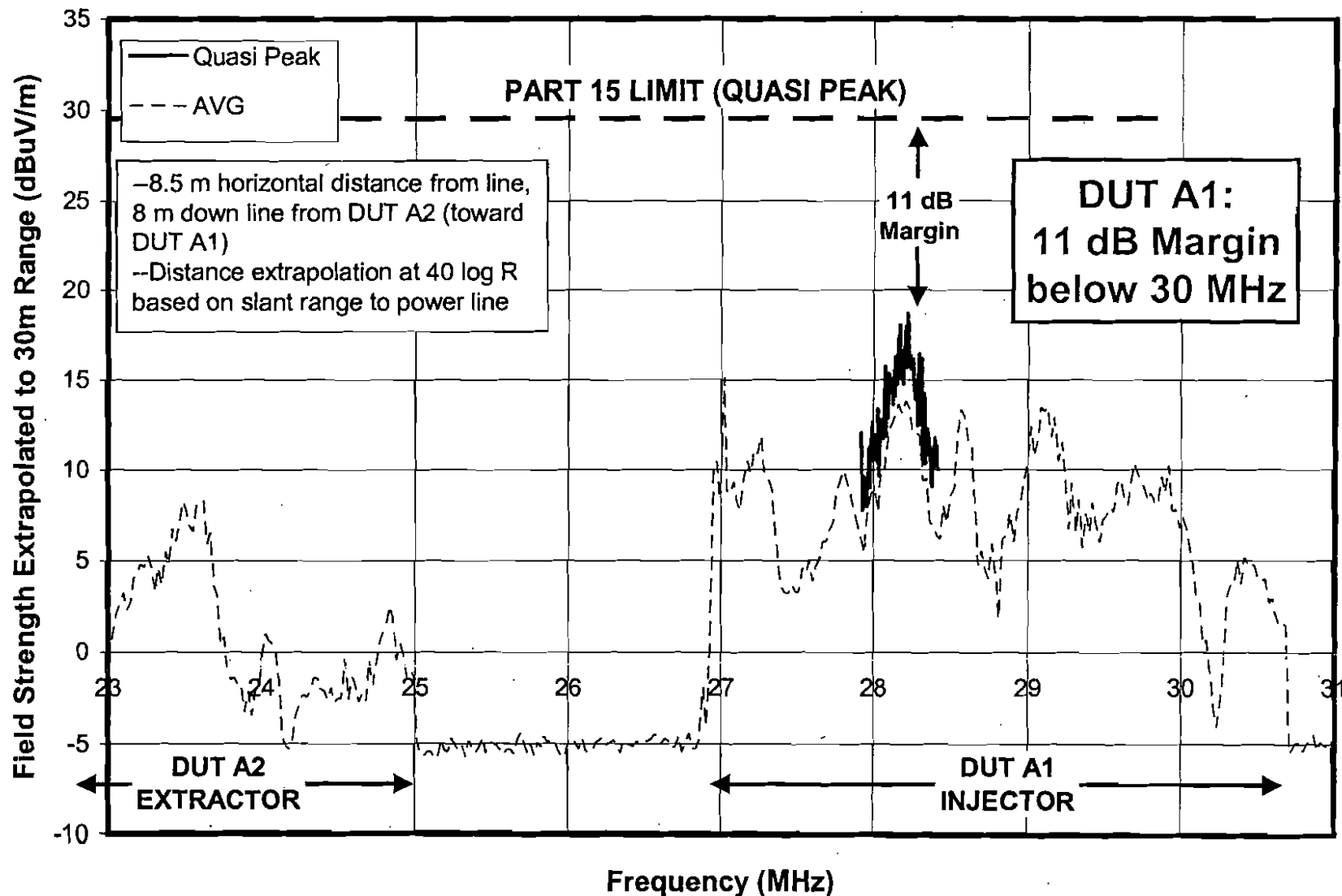


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Quasi Peak of DUTs A1 & A2:

8.5 m from line near DUT A2





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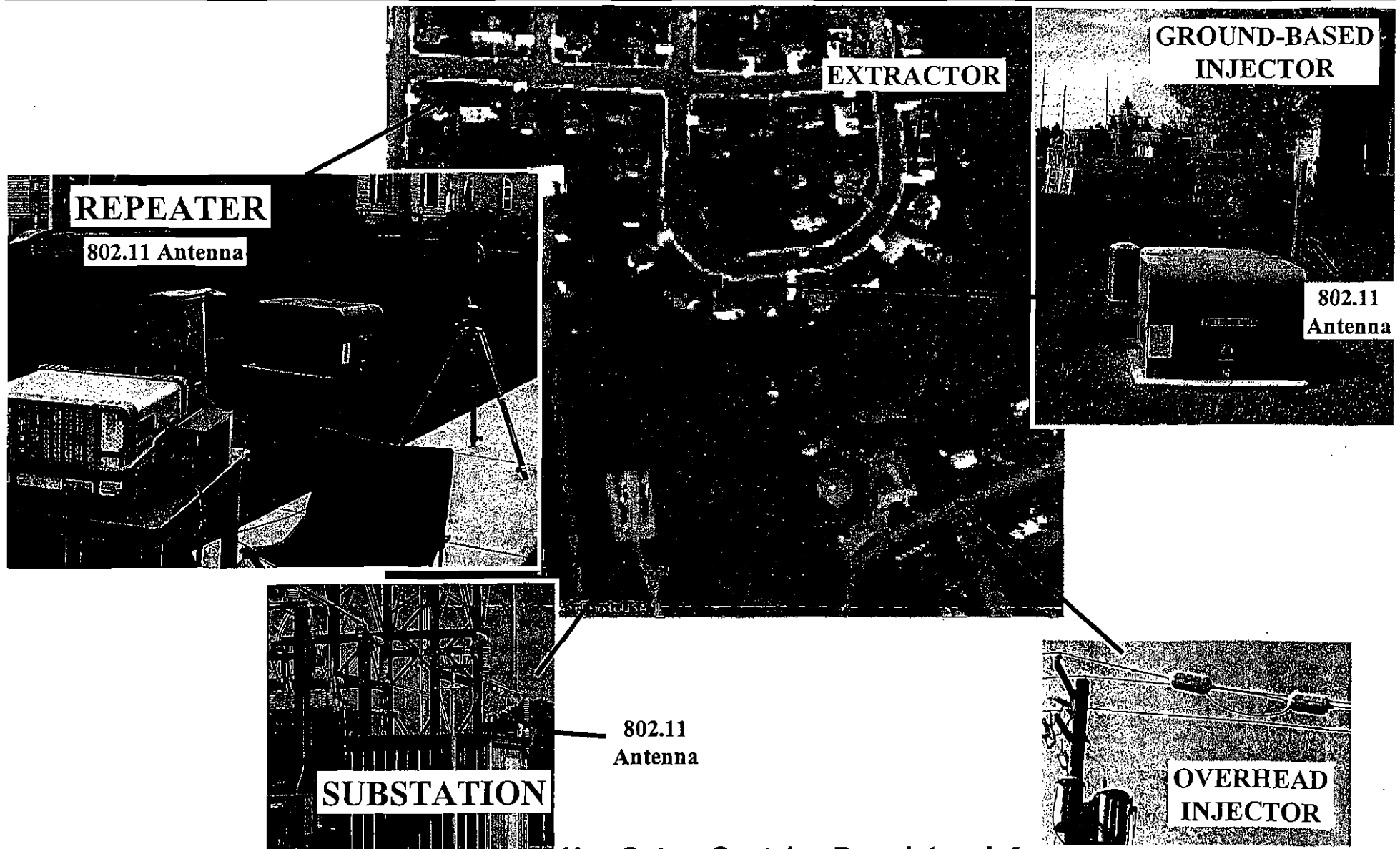
Amperion Ground-Based System



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Amperion's Ground-Based System

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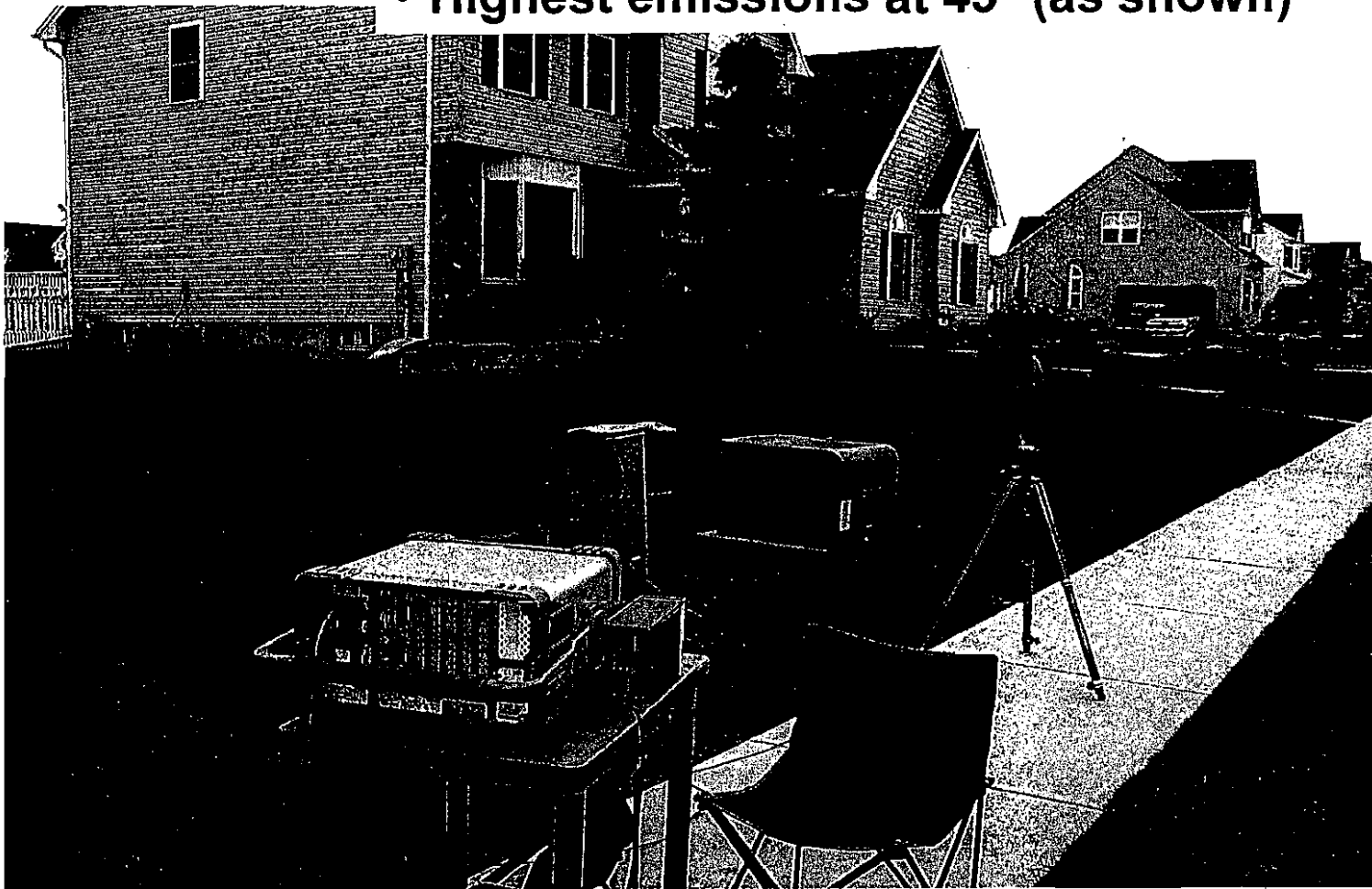


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Ground-Based Repeater (DUT A3)

- Tested at 3 m distance to achieve adequate SNR
- Tested 4 radials: 90°, 45°, 0°, & - 45° (CW from street)
- Highest emissions at 45° (as shown)

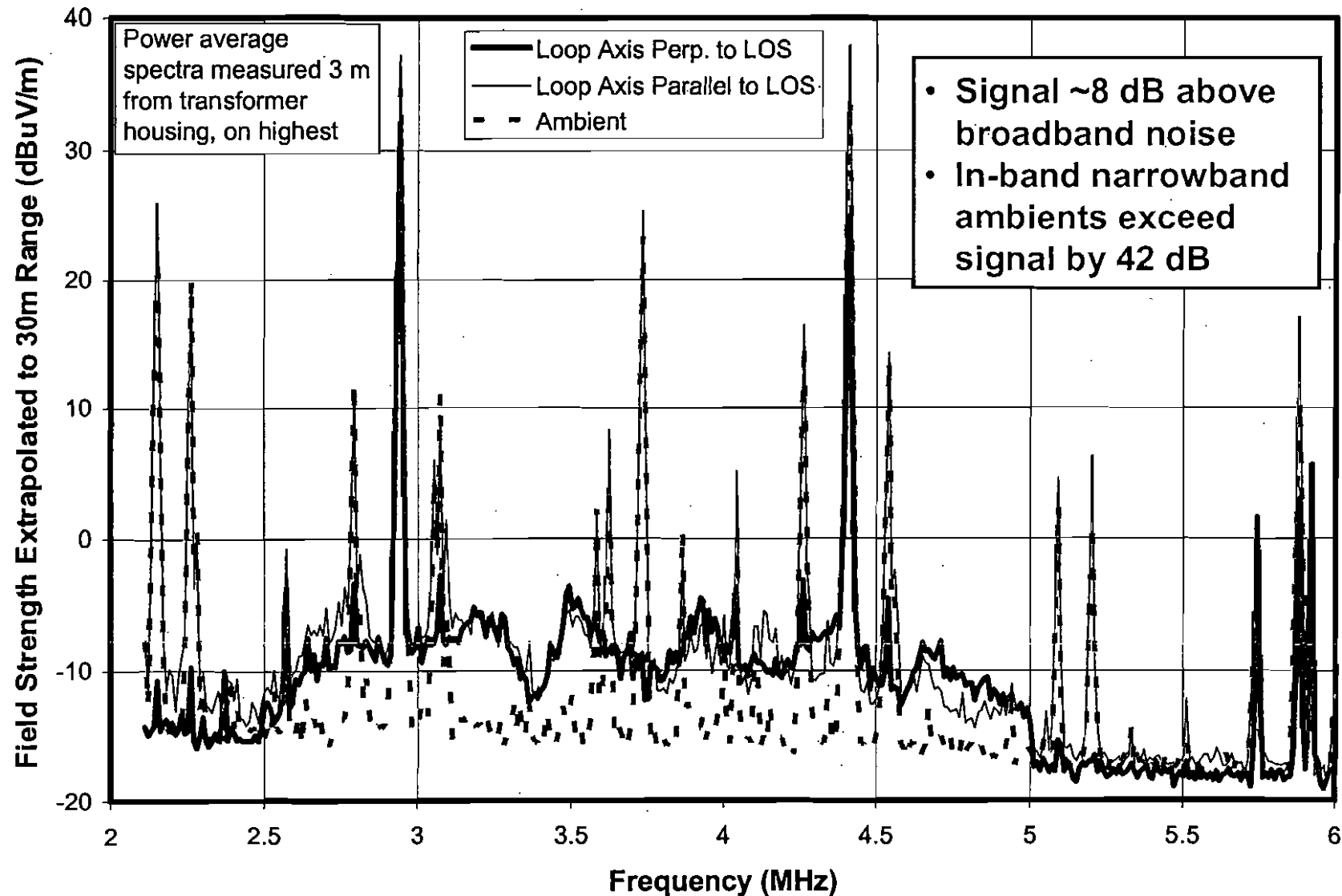




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Average Spectra of DUT A3

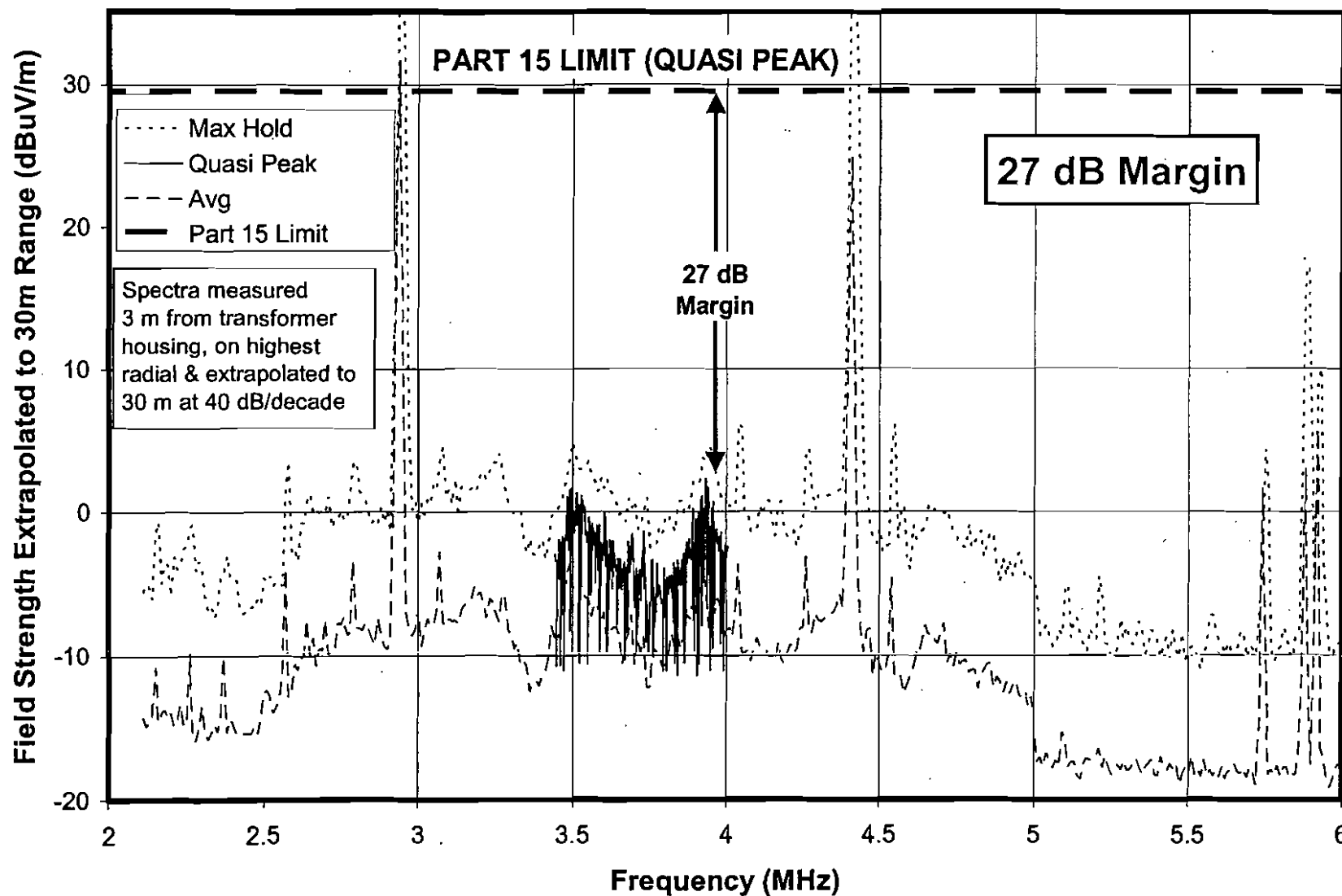


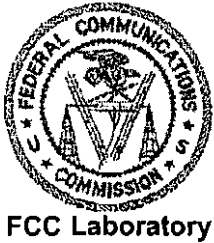


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Quasi Peak of DUT A3





Conclusions Regarding Amperion

- **Compliance**

- Overhead devices (Injector and Extractor)
 - Measurements were within limits
 - Maximum observed radiated emission below 30 MHz in the intended band of operation was 11 dB below the Part 15 quasi-peak emission limit devices for underground wiring
- Ground-based device (Repeater)
 - Measurements were within limits
 - Maximum observed radiated emission below 30 MHz in the intended band of operation was 27 dB below the Part 15 quasi-peak emission limit

- **Caveat**

- Measurements were not intended to ensure compliance
 - Emissions of the Injector device extended above 30 MHz. E-field antenna measurements necessary to ensure compliance with Class B limits above 30 MHz were not performed
 - Testing was limited to intended operating bands of devices. Compliance was not tested over the full range of frequencies required by rules.
 - Testing was not performed on 3 installations or over a full set of radials
 - No conducted testing was performed

ORIGINAL UNREDACTED



Recommendations for Amperion

- **Frequency Bands**
 - Compliance testing on overhead lines should include lowest, highest, and mid-band intended operating channels.
- **Highest Band**
 - Operation on channel extending above 30 MHz should be avoided unless compliance with Class B limits is demonstrated or waiver is obtained.

ORIGINAL UNREDACTED



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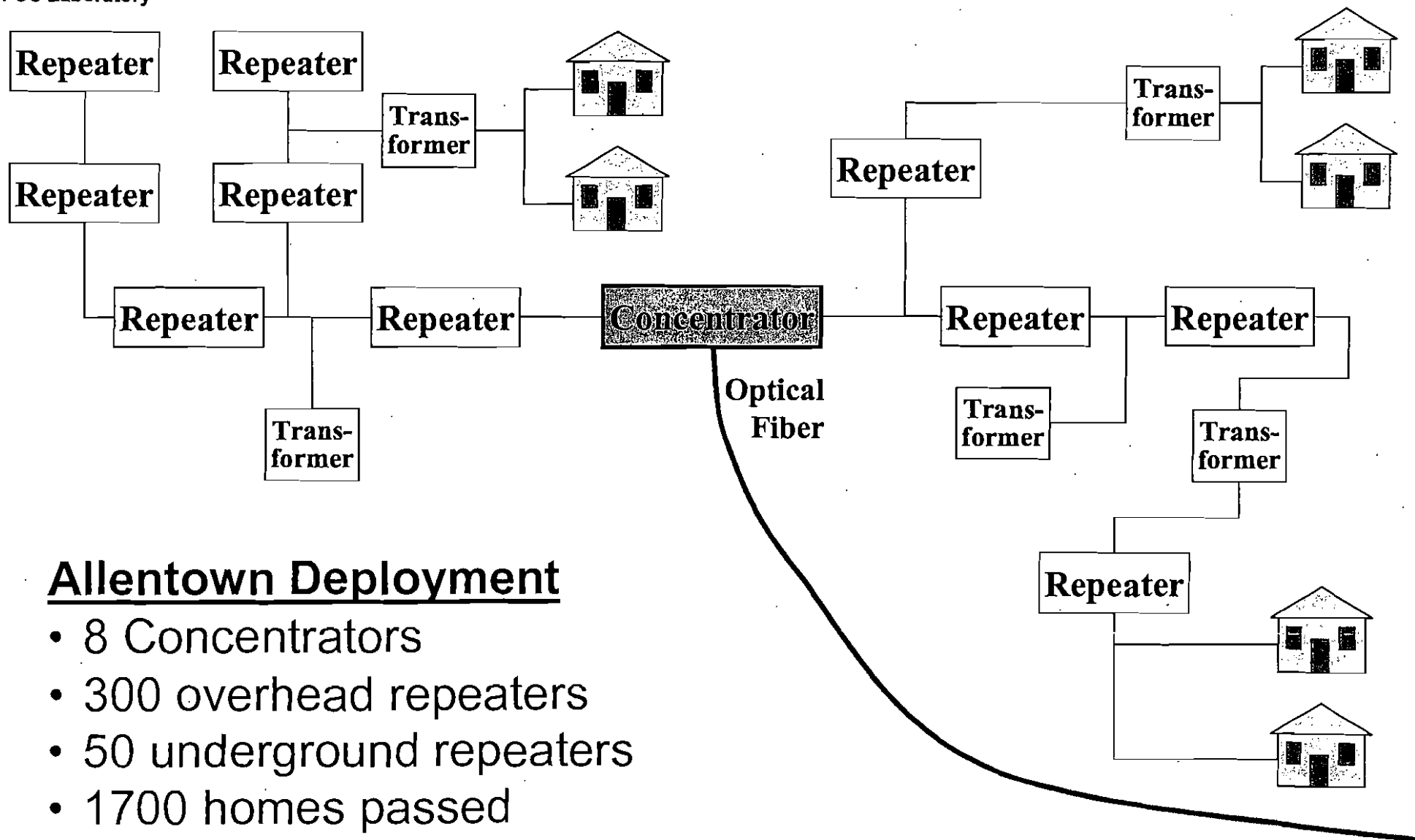
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Main.Net



Main.Net's Architecture

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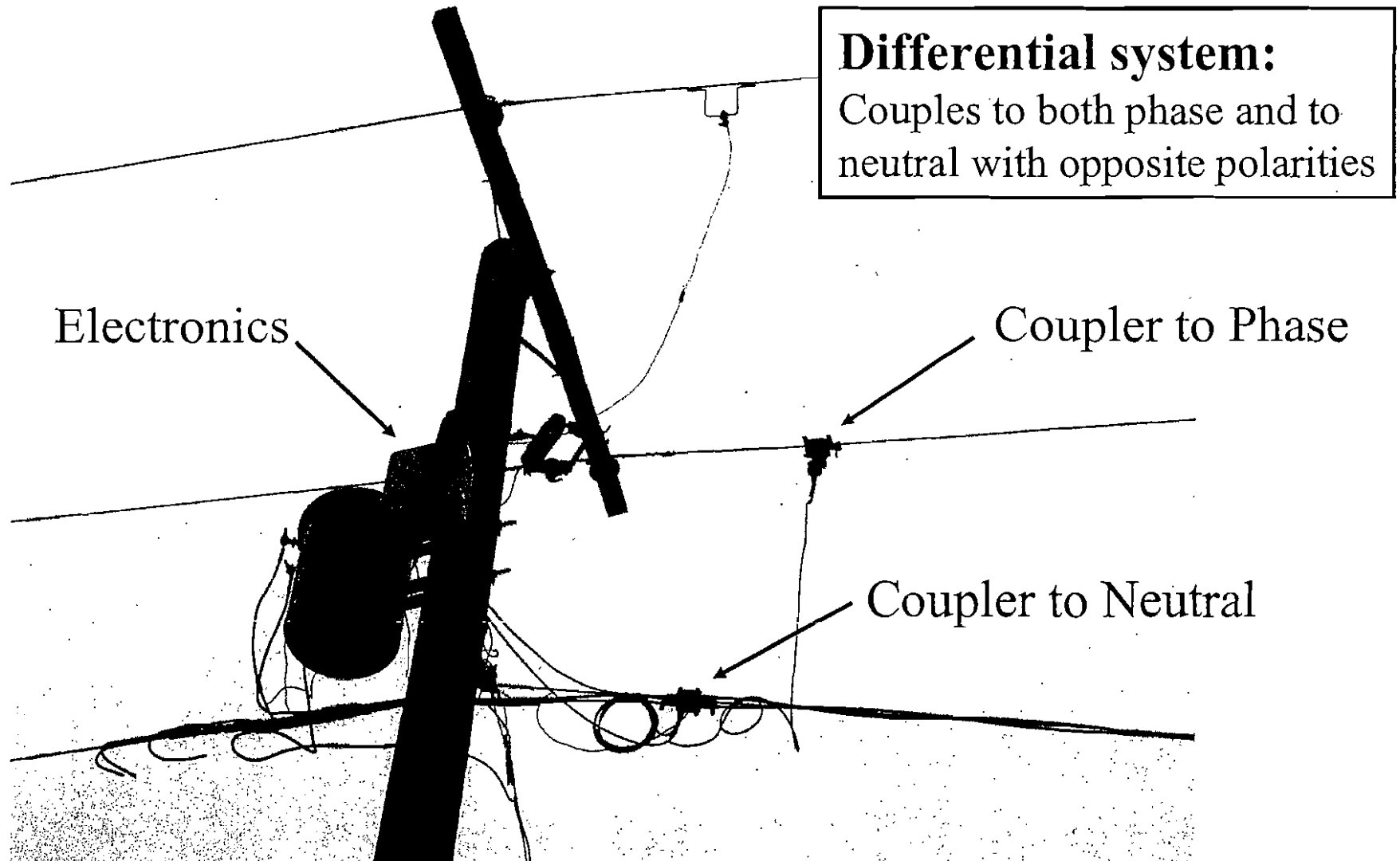
Main.Net Overhead System



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Main.Net Overhead Repeater (DUT M1)





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Main.Net Overhead Repeater (DUT M1)

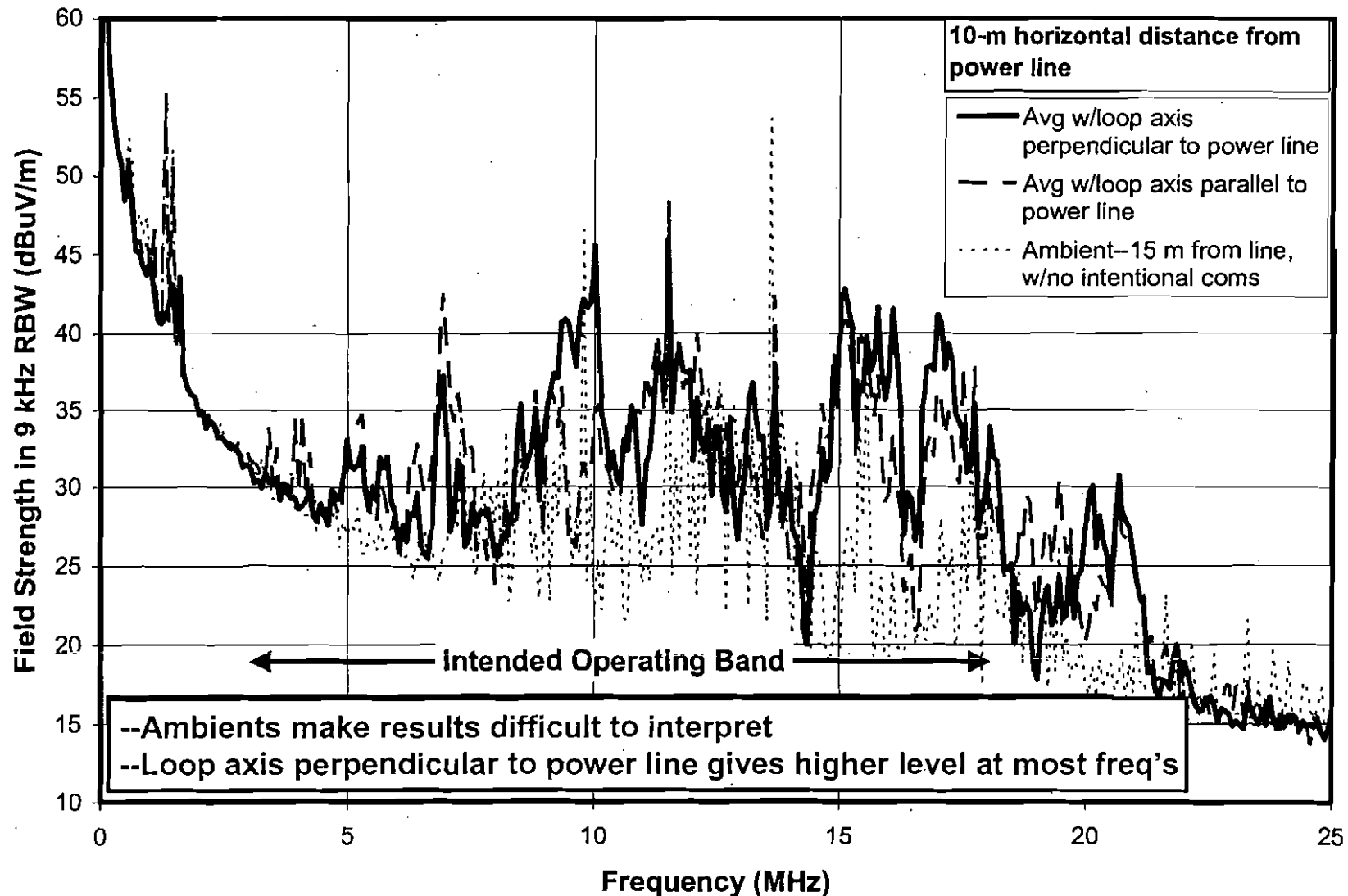




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Ambients and BPL Signal at Two Polarizations

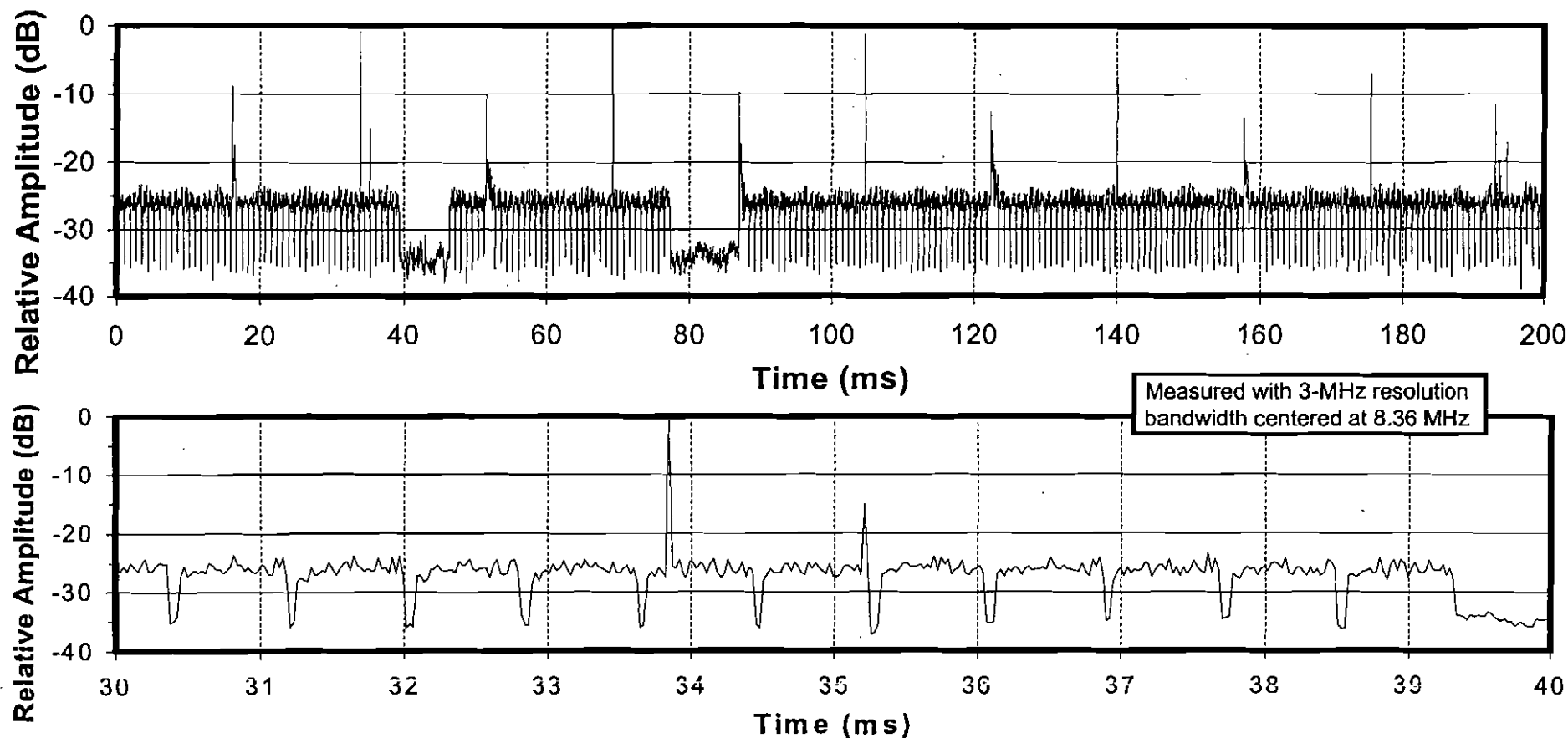




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Temporal Measurements



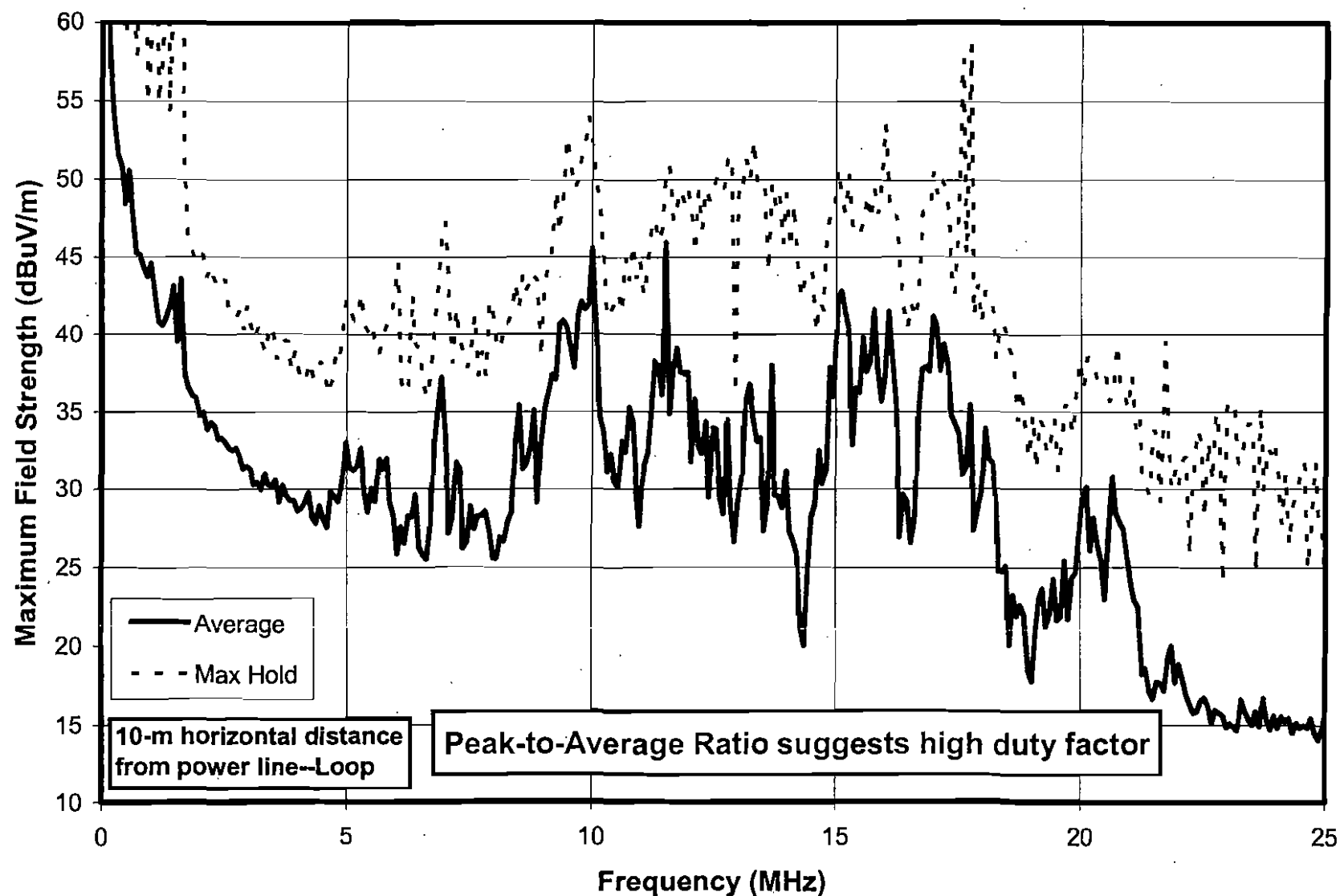
- Duty factor of primary signal was 85%
- Required 20 Hz pulse rate for quasi peak was achieved
- Source of higher level pulses 17.7 ms intervals was not determined, but did not impact quasi peak measurements



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Average and Peak

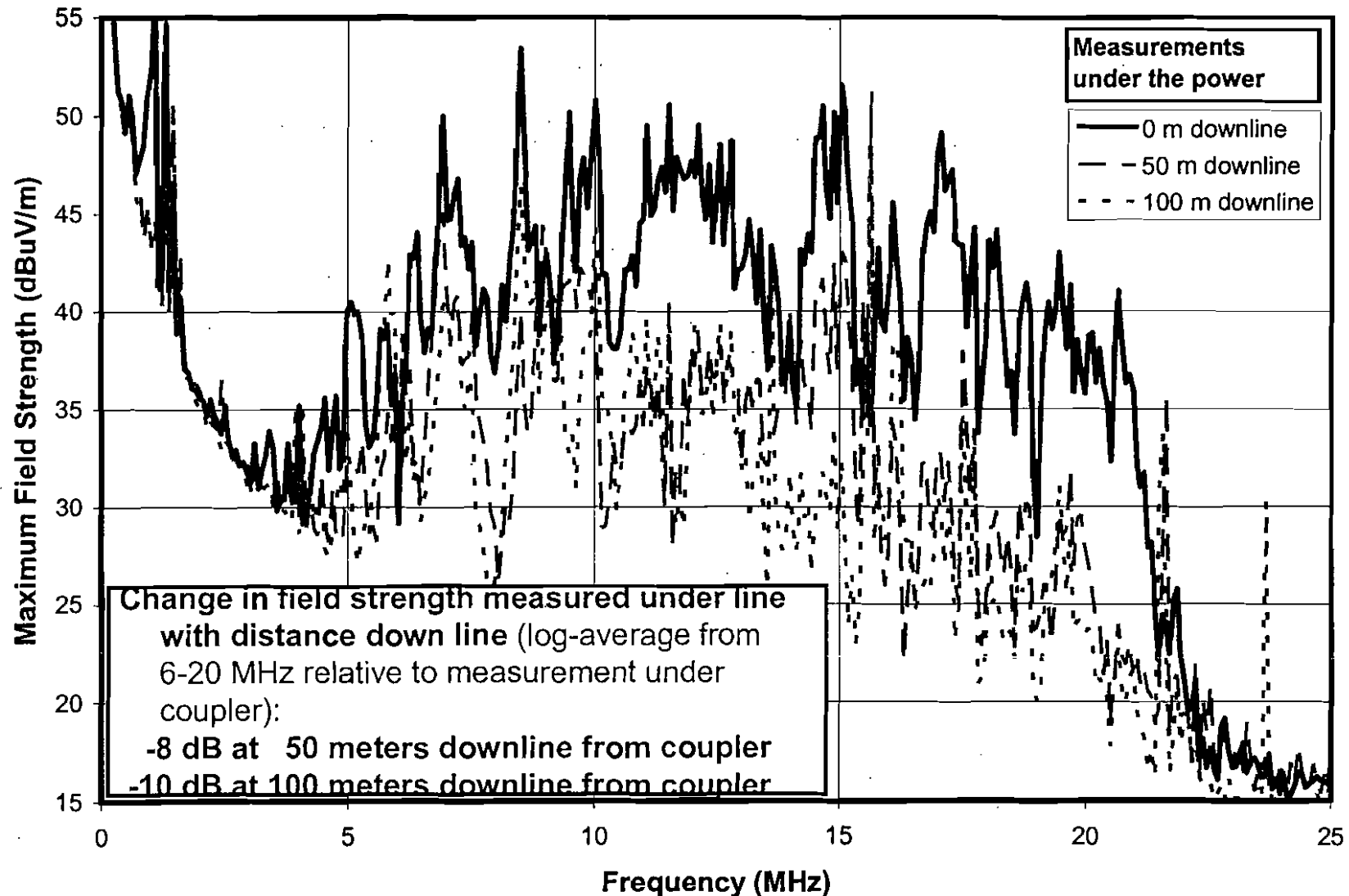




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Moving Down the Line Under the Line

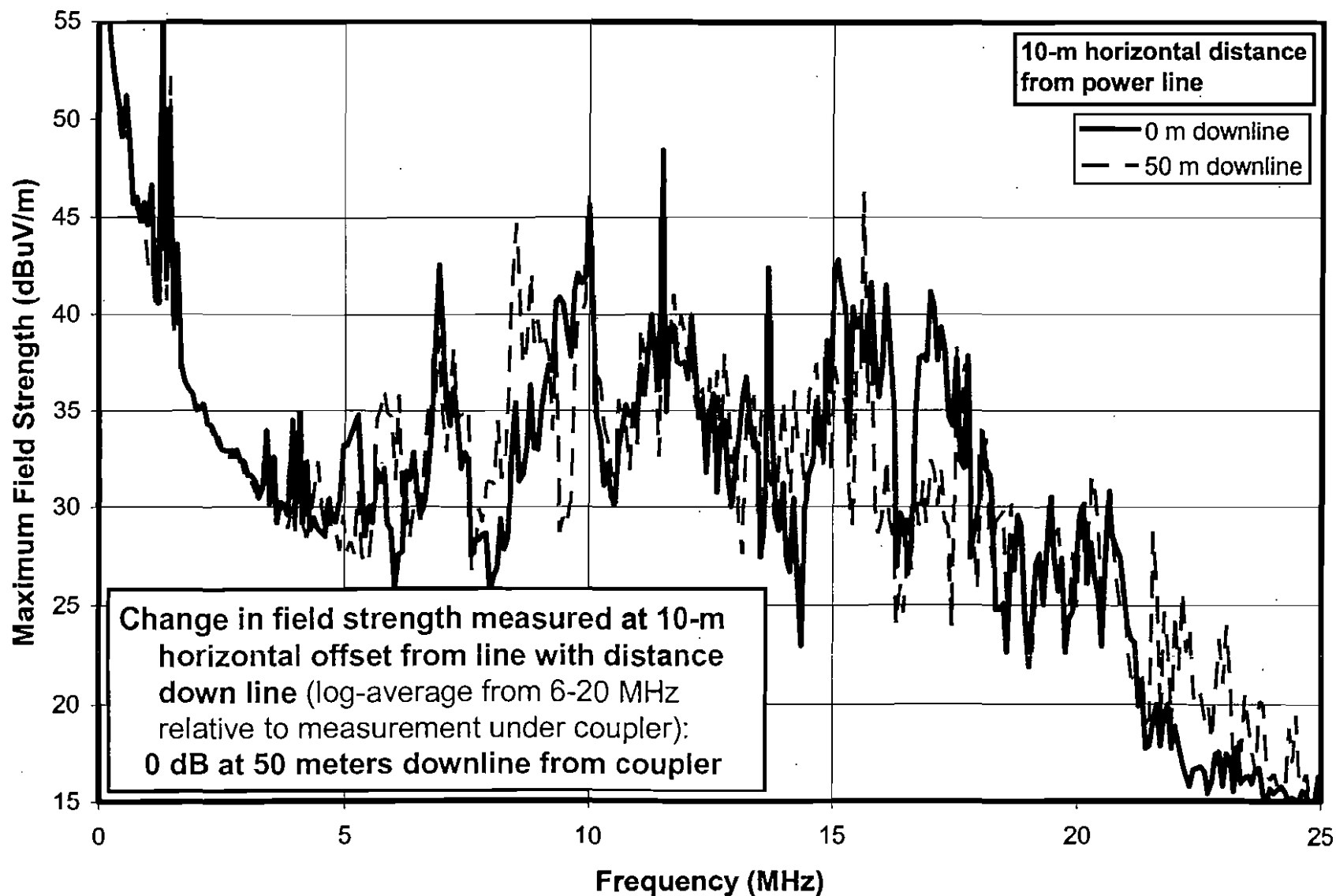




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Moving Down the Line 10 m to the Side

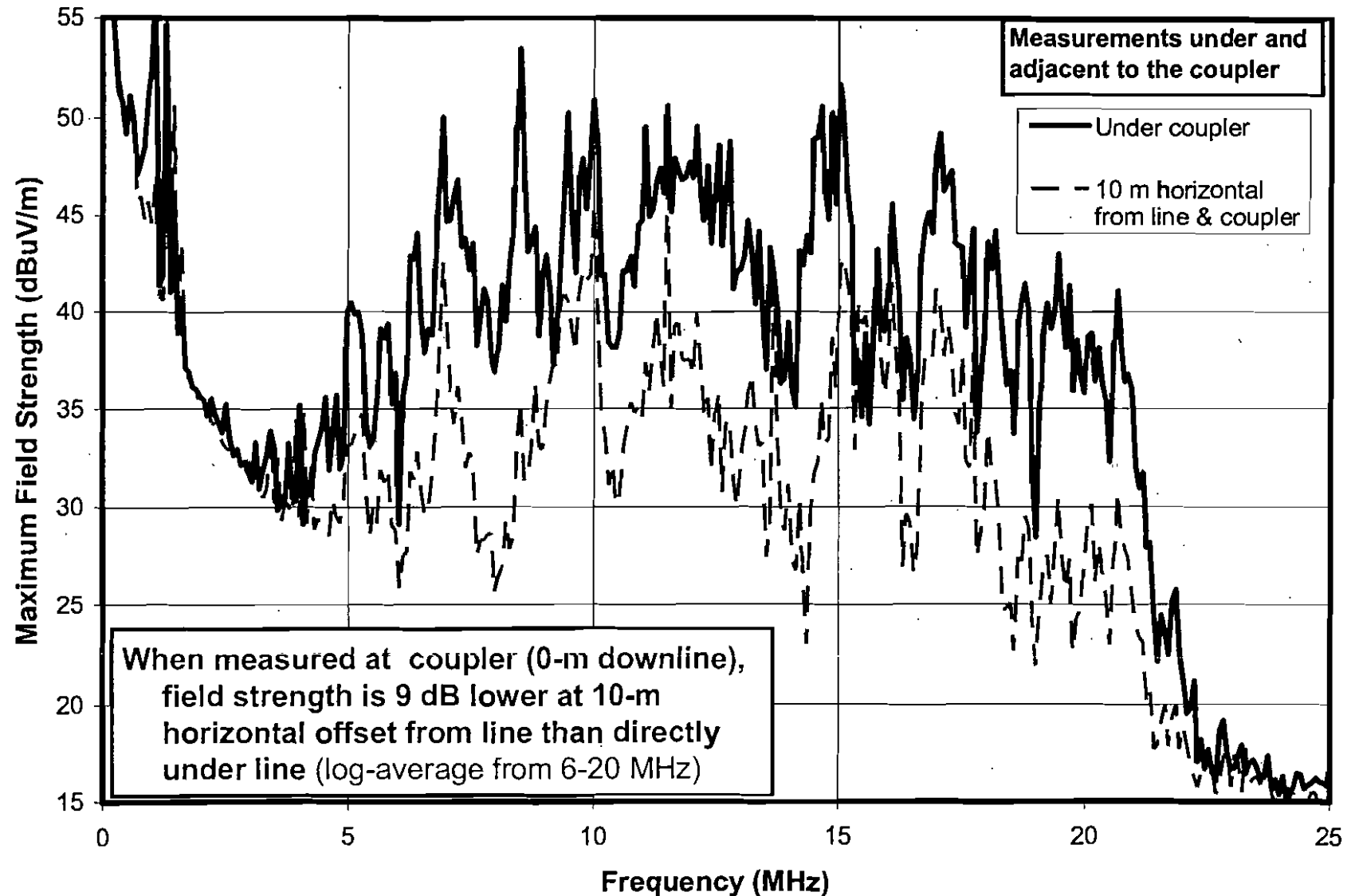




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Under and Adjacent to the Coupler

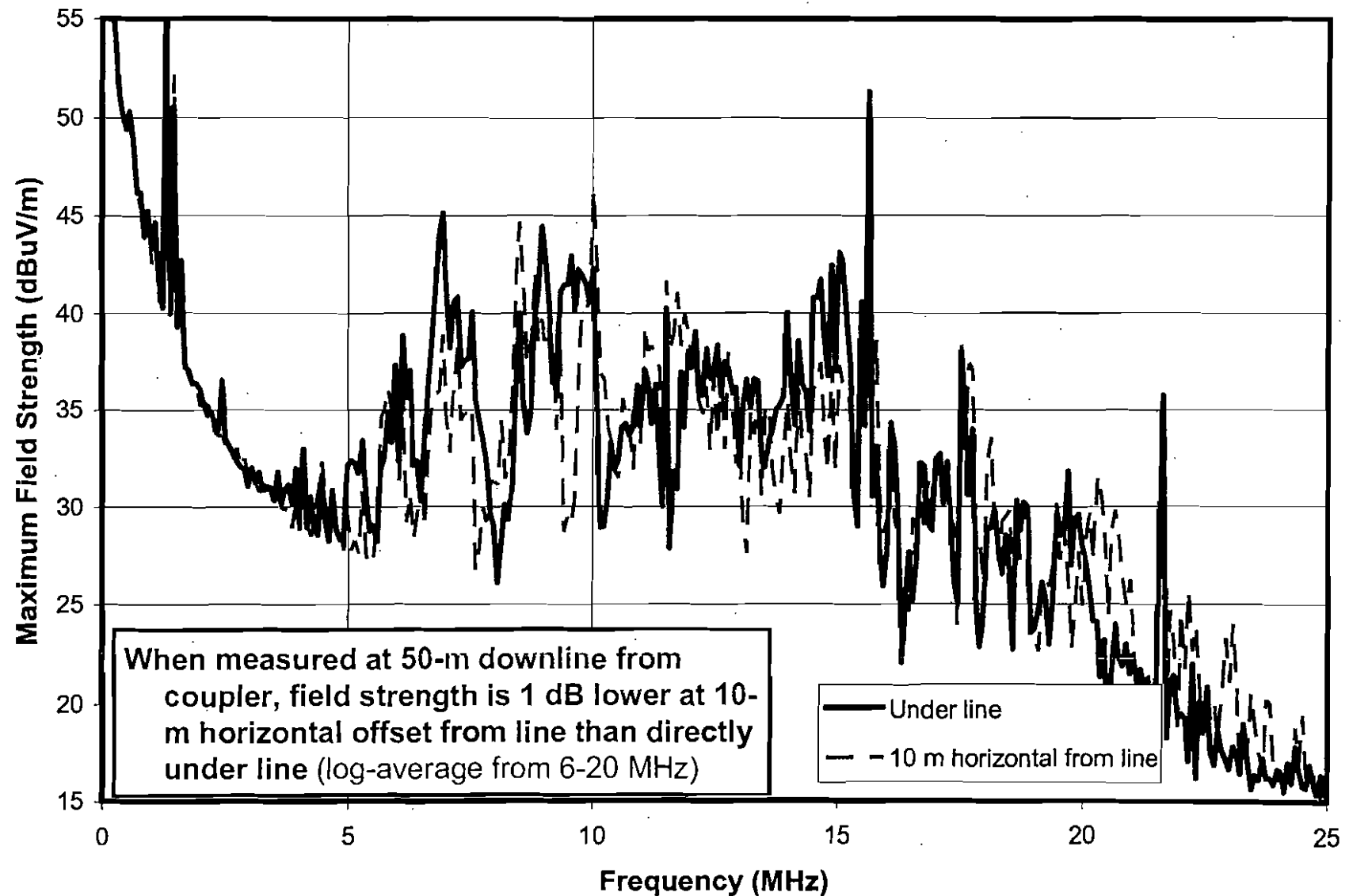




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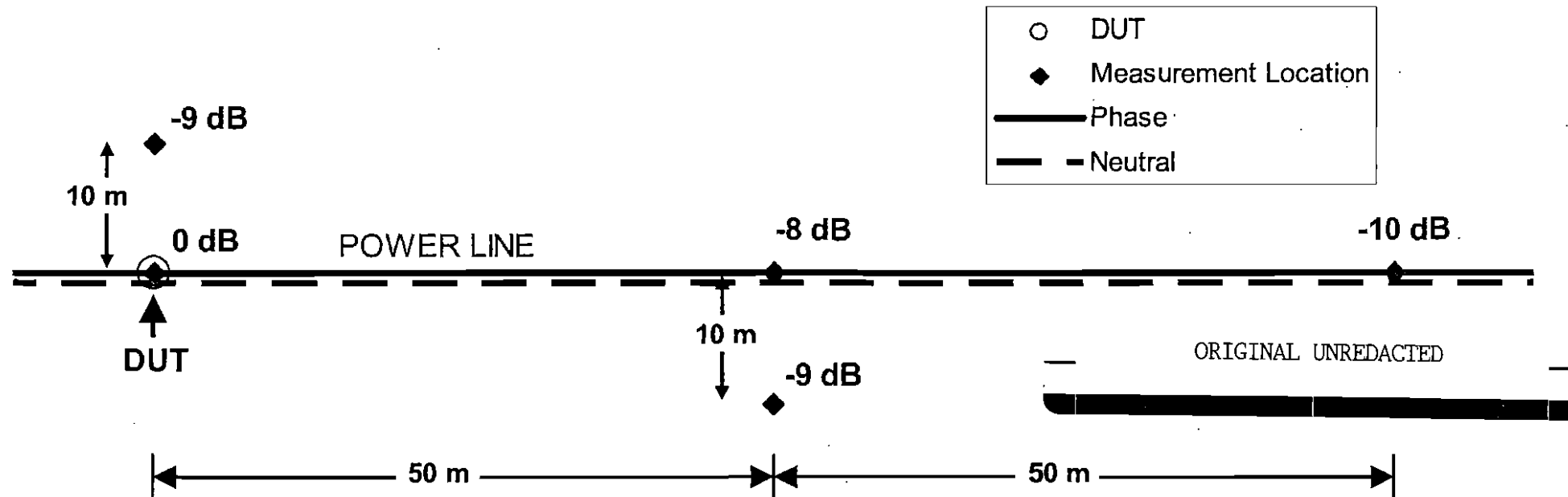
Under & 10 m to the Side, 50m Down Line





Summary of Relative Average Levels

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Results suggest the following:

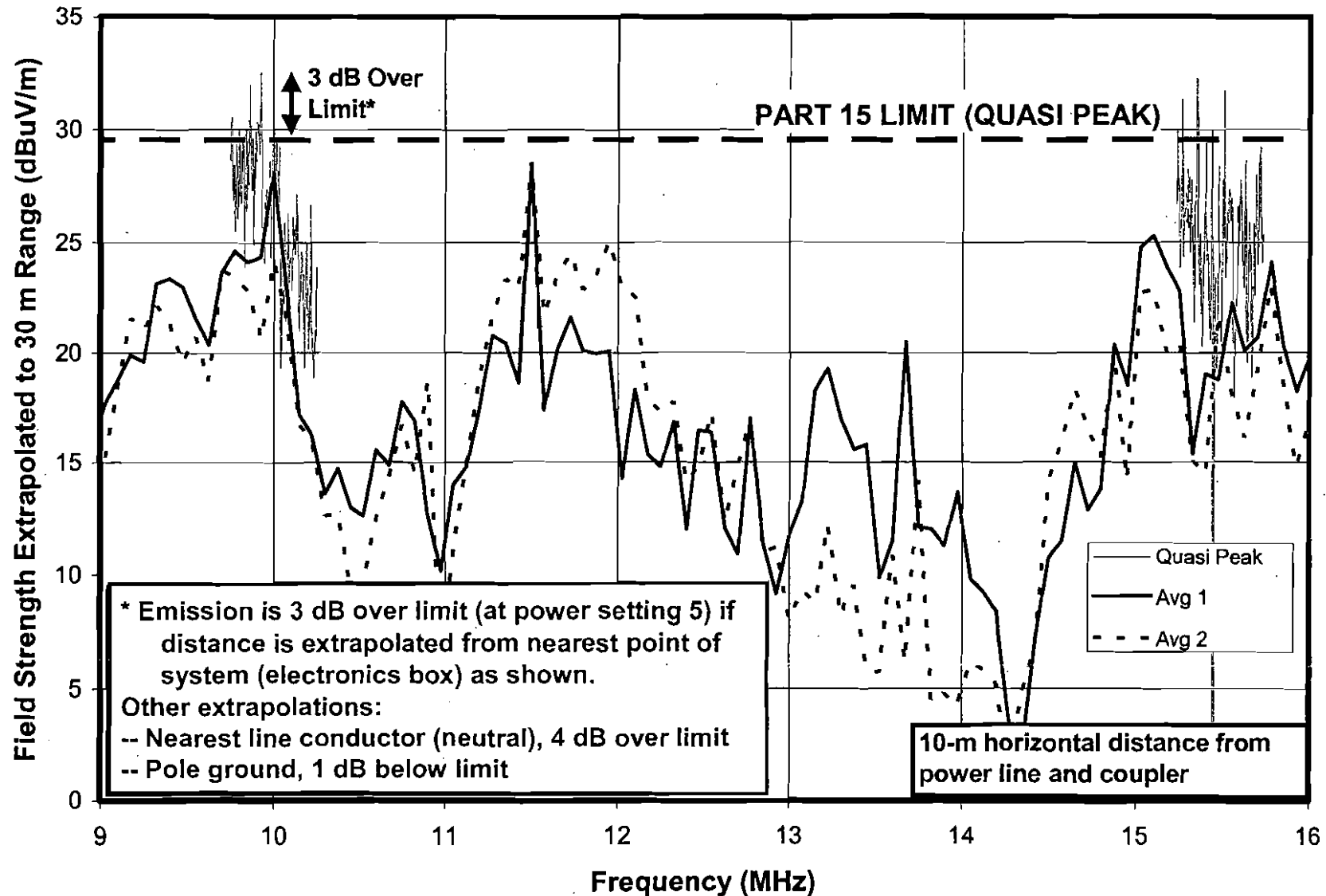
- Signal decay in moving down line is small—in the range of 0 to 2 dB in 50 m
- Amplitude measured under coupler is anomalously high—possibly due to RF current in the pole ground wire



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Quasi Peak





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Main.Net Ground-Based System



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Main.Net Overhead Repeater (DUT M1)

